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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/699,373	10/31/2000	Kouji Shiraishi	P100021-00030	7821

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EXAMINER

VANOY, TIMOTHY C

ART UNIT	PAPER NUMBER
1754	3

DATE MAILED: 04/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

MFB

Office Action Summary	Application No.	Applicant(s)
	09-699,373	SHIRAISHI ET AL.
	Examiner	Group Art Unit
	VANOY	1754

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THREE MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- Responsive to communication(s) filed on _____.
- This action is **FINAL**.
- Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- Claim(s) 1 AND 2 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- Claim(s) _____ is/are allowed.
- Claim(s) 1 AND 2 is/are rejected.
- Claim(s) 1 AND 2 is/are objected to.
- Claim(s) _____ are subject to restriction or election requirement

Application Papers

- The proposed drawing correction, filed on _____ is approved disapproved.
- The drawing(s) filed on 10.31.00 is/are objected to by the Examiner
- The specification is objected to by the Examiner.
- The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

All Some* None of the:

Certified copies of the priority documents have been received.

Certified copies of the priority documents have been received in Application No. _____.

Copies of the certified copies of the priority documents have been received

in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- Information Disclosure Statement(s), PTO-1449, Paper No(s). _____ Interview Summary, PTO-413
- Notice of Reference(s) Cited, PTO-892 Notice of Informal Patent Application, PTO-152
- Notice of Draftsperson's Patent Drawing Review, PTO-948 Other _____

Office Action Summary

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The listing of references on pgs. 2, 4 and 7 in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the Examiner on form PTO-892, they have not been considered.

Oath/Declaration

⑥ The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because the non-initialed and/or non-dated alterations "(Japanese script)Ref: FJK-H078(Japanese script)" have been made in pencil in the upper right hand corner on the first page of the oath. See 37 CFR 1.52(c).

Drawings

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~~a~~(a) Figures 3 and 4 are objected to because they are duplicates. Even the brief description of figures 3 and 4 provided on pgs. 4 and 5 in the Applicants' specification do not distinguish them.

~~b~~(b) The Applicants are reminded that figures 2, 3 and 4 should be designated by a legend such as —Prior Art—*if these figures are prior art*. See MPEP § 608.02(g).

A proposed drawing correction or corrected drawings are required in reply to this Office Action **to avoid abandonment of the application**. The objection to the drawings will not be held in abeyance.

Specification

~~a~~(a) The abstract is objected to because it does not provide any examples of what the "acidic component" is.

b) In the 11th line in the text of the abstract, the phrase ". . . after subjected to the mixing. . ." is confusing because none of the previous steps (a), (b) or (c) mentioned any mixing step – so that seawater mentioned in the 11th line can not have been subjected to any previous mixing step.

c) The abstract does not define "noncontact seawater".

d) In the last line of the abstract, it appears that "mixing" should be inserted before "seawater".

~~e~~(e) In the title of the invention, the phrase "for advanced treatment" should be deleted, since it is analogous to the "improved" type clauses objected to in section 606 in the MPEP (8th ed.).

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✓f The use of the possible trademarks "Raschig" on pg. 6 last line; "Moretana column" on pg. 7 lns. 10, 21 and 31 and pg. 10 ln. 20 have been noted in this application. If these are trademarks, then they should be capitalized wherever they appear and be accompanied by their generic terminology. **The Applicants should review their entire specification to ensure that all trademarks are either capitalized and/or accompanied with the classic, superscripted trademark indicators "TM" or "®" and their generic terminology.**

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Objections

- ✓a) Claim 1 is objected to because all of the steps (a) through (d) are directed to an apparatus, but none of the steps (a) through (d) are directed to any process step limitations that would define and limit the method set forth in line 1 of claim 1.*
- ✓b) In claim 2 6th line, "provided" should be replaced with "packed" and in the 7th line "with" should be replaced with "to".*
- ✓c) In claim 2, 2nd paragraph, if the gas velocity of the treated gas entering the column is 0, then the treated gas would not enter the column.*

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 2 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as their invention.

- a*) In claim 1 ln. 11, the claim language does not particularly point out and distinctly set forth what "noncontact" seawater is. Since this seawater is also brought into gas-liquid contact with the gas (via its presence in the mixture of seawaters), then it is not clear how it can be labeled "noncontact" seawater.
- b*) In claim 1 ln. 12, there is no antecedent basis in any of steps (a), (b) and (c) for the seawater being subjected to mixing. The seawater in step (d) has only be subjected to contact with the gas in step (b) and to oxidation in step (c), but not to any previous mixing steps.
- c*) Claim 2, 3rd paragraph does not explain or set forth how "of 1030" further limits the seawater.
- d*) Claim 2 does not particularly point out and distinctly set forth what the "Ugm" is mentioned in the 17th and 23rd lines in the claim.
- e*) Claim 2 does not particularly point out and distinctly set forth how the "exhaust gas" is treated. Claim 2 only describes how the "treated gas" is treated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The person having "ordinary skill in the art" has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11-290,643 A in view of pgs. 14-13 and 18-31 in the Chemical Engineers' Handbook (5th ed.) edited by Perry et al.

The English abstract of JP-643 discloses a method for removing contaminants out of a gas by injecting the contaminated gas into a gas-liquid scrub tower where it counter-currently contacts with seawater and discharging the scrubbed gas out of the gas-liquid contact tower and charging the resulting (contaminant-containing) seawater into an oxidation tank where both NaOH and air are injected into the contaminant-containing seawater (note that Fig. 3 appears to illustrate the addition of NaOH into this oxidation tank 2). It appears that untreated, "raw" seawater (i. e. "noncontact seawater") is then mixed in with seawater that has been previously treated with air and NaOH, and this mixture of seawaters is then discharged.

Note that the 1st paragraph in the text of JP-643 appears to mention the same 500 mm set forth in the 4th line in Applicants' claim 2 as well as an Fc ratio of 0.3 to 0.6.

Note that parag. no [0003] in the text of JP-643 appears to mention the same L value ranging from 10^4 to 25×10^4 ; the same L/G ratio being 3.6 set forth in lines 9-13 in Applicants' claim 2;

Note that the top half of pg. 2 in JP-643 reports the same ρ_L (kg/m^3) = 1030 and the same ρ_G/ρ_L ratio being 0.838×10^{-3} ; the same Ugm being $49.14 Fc^{0.7} (\rho_G/\rho_L \times 10^{-3})^{0.5} (L/G)^{-1/3} (g \cdot L)^{-1/2}$ and L being $(2\sigma/\rho_L \cdot g)^{-1/2}$ set forth in lines 18-26 in Applicants' claim 2.

Applicants' claim 2 sets forth that Ug may be a value ranging from 0 to 2 times Ugm (m/sec), however, while this equation does not appear to be expressly recited in the text of JP-643, Fig. 1 in JP-643 does illustrate Ug values ranging from as low as 1.5 to as high as 10 and also appears to illustrate Ugm values values of just under 2 to just

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over 4 (please see the curve labeled Ugm) – thus, the actual Ug and Ugm values contemplated by the scope of Applicants' claim 2 would not seem to be indistinct from the actual values embraced in the process of JP-643.

The difference between Applicants' claims 1 and 2 and JP-643 is that Applicants' claim 1 sets forth that the tower is a packed tower and Applicants' claim 2 sets forth that the packing height in the tower ranges from 0.5 to 4 meters (that is, the Applicants use a packed tower having a diameter that is at least 500 mm (1.64 feet)), while JP-643 uses plate towers.

Pg. 14-13 in the Chemical Engineers' Handbook (5th ed.) reports (under the paragraph header titled "Packed Towers") that the advantage for small (packed) columns having a diameter that is less than about 2 feet is that they will usually be cheaper than plate towers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to *modify* the process described in JP-643 by *substituting* a packed gas-liquid scrubbing tower *in lieu of* the plate gas-liquid scrubbing tower, in the manner required by Applicants' claims 1 and 2, because pg. 14-13 in the Chemical Engineers' Handbook fairly teaches that it is *less expensive* to use packed towers having a diameter of less than 2 feet (which is not distinct from the diameter of at least 500 mm, reported in Applicants' claim 2 and also in the first paragraph in the text of JP-643) as compared to using plate towers.

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The difference between the Applicants' claims and JP-643 is that Applicants' claim 2 defines the height of the packing in the column to range from 0.5 to 4 meters (1.64 to 13.12 feet).

In the discussion of packed columns on 18-31 in the Chemical Engineers' Handbook, mention is made of packing heights (in packed towers) as low as 4 feet to as high as 35 feet, therefore it is submitted to have been obvious to one of ordinary skill in the art at the time the invention was made to describe the height of the packing in the column to range from 0.5 to 4 meters (1.64 to 13.12 feet), in the manner called for in Applicants' claim 2, because the discussion of packing heights set forth on pg. 18-31 in the Chemical Engineers' Handbook fairly suggests that the claimed heights of 0.5 to 4 meters (1.64 to 13.12 feet) are merely representative and typical of the art, consistent with the conclusions of the *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976) court decision set forth in section 2144.05(I) in the MPEP (8th ed.). It is obvious to use such process parameters that are conventionally and routinely used in this art.

The following references, which are indicative of the state of the art, are made of record:

U. S. Pat. 5,225,176 disclosing the use of seawater to clean gas;

U. S. Pat. 3,941,572 disclosing a process for gas absorption and dust removal;

U. S. Pat. 3,892,837 disclosing a process for removing sulfur dioxide out of gas,

and

JP 3-52,623 A disclosing the use of seawater is a gas cleaning process.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy C. Vanoy whose telephone number is 703-308-2540. The examiner can normally be reached on 8 hr. days.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffen can be reached on 703-308-1164. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Timothy Vanoy/tv
April 3, 2002

Timothy Vanoy
Timothy Vanoy
Patent Examiner

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